

Planetary Biodiversity Inventories (PBI)

Special Biennial Competition in Biodiversity Surveys and Inventories

Program Solicitation

NSF 06-500

Replaces Document NSF 02-186



National Science Foundation
Directorate for Biological Sciences
Division of Environmental Biology

Full Proposal Target Date(s):

January 10, 2006

January 10, 2008

January 10, 2010

REVISIONS AND UPDATES

The previous program solicitation has been updated to reflect the biennial nature of this special competition, to delete external funding sources that are no longer available, and to reflect the Cluster structure in the Division of Environmental Biology (DEB).

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:

Planetary Biodiversity Inventories (PBI)
Special Biennial Competition in Biodiversity Surveys and Inventories

Synopsis of Program:

To accelerate the discovery and study of the world's biodiversity, proposals are invited from teams of investigators to conduct a worldwide, species-level systematic inventory of a major group of organisms. Each project should conduct fieldwork necessary to fill gaps in existing collections, produce descriptions, taxonomic revisions, web-searchable databases, and interactive keys (or other automated identification tools) for all new and known species in the targeted group, analyze their phylogenetic relationships, and establish predictive classifications for the group. Proposals may target any particular group of organisms, from terrestrial, fresh-water, or marine habitats, at any feasible level in the taxonomic hierarchy, but must be global in scope.

Cognizant Program Officer(s):

- Charles Lydeard, Program Director, Directorate for Biological Sciences, Division of Environmental Biology, 635 N, telephone: (703) 292-7142, fax: (703) 292-9064, email: clydeard@nsf.gov

- Juan Carlos Morales, Program Director, Directorate for Biological Sciences, Division of Environmental Biology, 635 N, telephone: (703) 292-8481, fax: (703) 292-9064, email: jmorales@nsf.gov
- James E. Rodman, Program Director, Directorate for Biological Sciences, Division of Environmental Biology, 635 N, telephone: (703) 292-8481, fax: (703) 292-9064, email: jrodman@nsf.gov
- Judith E. Skog, Program Director, Directorate for Biological Sciences, Division of Environmental Biology, 635 N, telephone: (703) 292-7203, email: jskog@nsf.gov

Applicable Catalog of Federal Domestic Assistance (CFDA) Number(s):

- 47.074 --- Biological Sciences

Eligibility Information

- **Organization Limit:** None Specified.
- **PI Eligibility Limit:** None Specified.
- **Limit on Number of Proposals:** None Specified.

Award Information

- **Anticipated Type of Award:** Standard or Continuing Grant
- **Estimated Number of Awards:** 3 to 5 - Awards are contingent on availability of funds and quality of proposals in each competition.
- **Anticipated Funding Amount:** \$2,500,000 available for PBI in Fiscal Year 2006 with individual awards not to exceed \$3,000,000 over a 5-year duration.

Proposal Preparation and Submission Instructions

A. Proposal Preparation Instructions

- **Full Proposal Preparation Instructions:** This solicitation contains information that supplements the standard Grant Proposal Guide (GPG) proposal preparation guidelines. Please see the full text of this solicitation for further information.

B. Budgetary Information

- **Cost Sharing Requirements:** Cost Sharing is not required by NSF.
- **Indirect Cost (F&A) Limitations:** Not Applicable.
- **Other Budgetary Limitations:** Not Applicable.

C. Due Dates

- **Full Proposal Target Date(s):**
January 10, 2006
January 10, 2008
January 10, 2010

Proposal Review Information

- **Merit Review Criteria:** National Science Board approved criteria. Additional merit review considerations apply. Please see the full text of this solicitation for further information.

Award Administration Information

- **Award Conditions:** Additional award conditions apply. Please see the full text of this solicitation for further information.
- **Reporting Requirements:** Additional reporting requirements apply. Please see the full text of this solicitation for further information.

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I. INTRODUCTION

The Planetary Biodiversity Inventories (PBI) program empowers collaborating teams of scientists and institutions to inventory a major taxonomic group across geologic time and ecological space. Biodiversity characterization on a global scale provides a comprehensive framework for understanding biotic history and ecosystem function. Projects are invited that provide robust morphological and molecular data for conducting phylogenetic analyses, for constructing predictive classifications, and for establishing precise, informative language for biological communication. Combining information about both fossil and extant organisms can create a globally applicable taxonomic system within which the distribution of species, and their characteristics, can be charted across ecological space and through geological time. Global inventories produce comprehensive specimen databases, up-to-date nomenclators (compilations of all relevant names), phylogenies, interactive keys, or other automated identification tools, enabling non-specialists to identify species more accurately, and provide a taxonomic guide for all subsequent biodiversity research.

II. PROGRAM DESCRIPTION

Proposals are invited from teams of investigators to conduct a worldwide, species-level systematic inventory of a major group of organisms. Each project will be expected to conduct fieldwork necessary to fill gaps in existing collections; produce descriptions, revisions, web pages, and interactive keys (or other automated identification tools) for all new and known species in the targeted group; analyze their phylogenetic relationships; and establish predictive classifications for the group. Proposals may target any particular group of organisms, from terrestrial, fresh-water, or marine habitats, at any feasible level in the taxonomic hierarchy, but must be global in scope.

Proposals for continental or global inventories of major taxonomic groups or clades should include the following information:

- description of the taxonomic group to be inventoried with indications of evidence for monophyly (if such evidence is not available, provide evidence for a clear delimitation of the taxonomic scope of the project); the current state of knowledge about the diversity, phylogenetic interrelationships, and classification of the group, and notable gaps in that knowledge (including knowledge of fossil taxa, if appropriate); the availability of existing collections of specimens (broadly construed to include cultures, stocks, or other material samples) and notable gaps in the geographic coverage of those collections; the availability of Internet resources relevant to these organisms; and the justification for the proposed large-scale approach (i. e., why is it beyond the scope of current single-investigator or small-team projects, and why is it important to survey this particular group now?).
- justification of new collecting efforts if needed, with comprehensive plans for sampling and data collection, including the intended geographic scale, the choice of sampling techniques, specimen preparation regimes, and types of data to be captured (morphological, behavioral, physiological, developmental, genomic, etc.). Include plans for databasing of all new locality information which must be fully georeferenced using GPS technology; retrospective locality data capture, including procedures for acquisition and quality control; methods to be used for judging the degree of completeness of sampling and for implementing "stop rules"; and the long-term preservation, curation, and vouchering of material (and extracts). Costs of specimen preparation and storage are eligible items for support (letters from curators of the relevant repositories must be included in the FastLane section on Supplementary Documentation).
- discussion of descriptive and analytical work to be done, with plans for describing new taxa; archiving and disseminating all resulting datasets regarding specimens, localities, characters, matrices, images, phylogenetic trees, etc.; analyzing the phylogenetic interrelationships of the taxa and constructing predictive classifications reflecting the results of those analyses; and developing web products including interactive keys (or other automated identification tools).
- a detailed Management Plan specifying the personnel responsible for all major tasks, with time-scheduling for all members of the team for the duration of the project; annual milestones for judging productivity and progress; training activities, including field, laboratory, and museum experience for trainees, with special attention to international training experiences for U.S. students as well as cooperation with foreign participants in training their students; plans for maintaining and enhancing leadership by the key team members (perhaps via an Executive Committee or Officer) and communication among all team members, as well as for expanding the group if that proves to be necessary or desirable, including plans for integration with colleagues not yet formally part of the group (both national and international); the curatorial, computational, and (where appropriate) sequencing facilities and resources available to the team; plans for coordination with other U.S. or foreign-based projects involving the same or related organisms, where appropriate, and details of the logistics of international, cooperative work with host country scientists and students. Describe concisely the database models and elements, as specified above, and plans for maintenance of databases beyond the duration of the grant, with identification of personnel charged with technical design and implementation. The data from the projects funded under this solicitation must be made accessible to, and usable by, the broad scientific and education communities through the Internet. To insure this, a data management plan must be submitted as part of the management plan. The plan should include the format for data and also address issues of maintenance. Images and other data should be included, along with a description of available tools.
- development of outreach efforts to disseminate results to the public as well as to other scientific communities (the hosting of workshops and other service activities are encouraged to disseminate best-practices resulting from the project, new software, and other products). Activities designed to encourage participation of investigators at small institutions, minority-serving institutions, community colleges, and secondary school teachers are also recommended.

PBI projects are expected to be ambitious, large-scale efforts that are multi-investigator, multi-institutional, and multi-national in scope. Proposals should address the issues enumerated in the sections above regarding large-scale or long-term inventories, but all these topics are intended for guidance, and not as constraints on innovative PBI projects.

III. ELIGIBILITY INFORMATION

The categories of proposers identified in the [Grant Proposal Guide](#) are eligible to submit proposals under this program solicitation. In particular, institutions and organizations with personnel and interests in the broad field of biodiversity study such as academic institutions, natural history museums, marine and freshwater science institutes, field stations, and botanical gardens should consider research opportunities supportable through the PBI program.

IV. AWARD INFORMATION

- **Anticipated Type of Award:** Standard or Continuing Grant
- **Estimated Number of Awards:** 3 to 5 - Awards are contingent on availability of funds and quality of proposals in each competition.
- **Anticipated Funding Amount:** \$2,500,000 available for PBI in Fiscal Year 2006 with individual awards not to exceed \$3,000,000 over a 5-year duration.

V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

A. Proposal Preparation Instructions

Full Proposal Instructions:

Proposals submitted in response to this program announcement/solicitation should be prepared and submitted in accordance with the general guidelines contained in the NSF *Grant Proposal Guide* (GPG). The complete text of the GPG is available electronically on the NSF Website at: http://www.nsf.gov/publications/pub_summ.jsp?ods_key=gpg. Paper copies of the GPG may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from pubs@nsf.gov.

Titles of Proposals: Titles of proposals for Planetary Biodiversity Inventories should begin with "PBI:".

Project Summary: Note that proposals must separately address, within the one-page Project Summary, both of the merit criteria approved by the National Science Board: what is the intellectual merit of the proposed activity and what are the broader impacts of the proposed activity? PBI projects must make substantial contributions to training, to broadening the participation of underrepresented groups in science, and to enhancing scientific infrastructure, particularly cyberinfrastructure and international partnerships, as well as to disseminate results broadly, to a wide variety of user communities.

Results from Prior NSF Support: If any PI or co-PI on the project has received NSF funding in the past five years, information on prior award(s) is required. Each PI and co-PI who has received more than one prior award (excluding amendments) must report on the award most closely related to the proposal. The information required is described in the GPG. Reviewers will be asked to comment on the quality of the prior work described in this section of the proposal. Please note that the proposal may devote up to five pages to describe the results, within the maximum 15 pages of Project Description. Results may be summarized in fewer than five pages, which would leave the balance of the 15 pages for the Project Description.

Management Plan for PBI: A Management Plan, up to 5 pages maximum, as described in Section II. Program Description, should be included in the Supplementary Documentation section of the FastLane proposal. This section is in addition to the 15 page limit of the Project Description.

Coordination with Other Projects: If higher-level phylogenetic research on the chosen group of organisms is funded already by an NSF award (for example, through the Assembling the Tree of Life competition), the PI should provide a plan for coordinating activities with that funded project. If two or more PBI proposals with substantially overlapping or complementary goals and scope remain in consideration for funding after initial merit review, the PIs of those proposals may be asked to collaborate, and to submit a coordination plan prior to the final funding decision. Note that PBI projects are not required to include detailed phylogenetic analyses of the interrelationships of each constituent species, but are expected to provide phylogenetic analyses for genera and higher taxa. Knowledge of, contribution to, and explicit coordination with appropriate major global database and portal efforts to disseminate taxonomic data (such as Global Biodiversity Information Facility, GBIF, Census of Marine Life, CoML, or Ocean Biogeographic Information System, OBIS) are expected.

International Opportunity: The PBI initiative encourages laboratory-to-laboratory interactions between U.S. and foreign institutions to address PBI goals. NSF funds may be requested to support foreign investigators and students to work in U.S. laboratories and for U.S. investigators to work in foreign laboratories. Foreign participants should be encouraged to seek additional support for their parts of the project from their own national programs.

Vertebrate Animals: If the proposed research includes the collection of vertebrate animals, the Principal Investigator must respond to the NSF Grant Proposal Guide section on required documentation for proposals involving vertebrate animals. See Section II.D.5. of the Grant Proposal Guide.

Special Information and Supplementary Documentation: Provide information such as letters of collaboration, collecting permits, environmental impact statement, and other allowed items as noted in the current issuance of the GPG. Include letters of support and other materials (such as the vertebrate animal care certificate, if applicable). A maximum of 5 pages for

the Management Plan (as detailed above) should be included in the supplemental documents. This information must be added to the Supplementary Documentation section of FastLane to allow the full 15 pages to be used for the Project Description.

Conflicts of Interest Document: A Conflicts of Interest document must be included in the Additional Single Copy Documents section of the FastLane proposal. Include a table that lists the names of persons with conflicts of interest for all senior personnel (PI and co-PIs) and any named personnel whose salary is requested in the project budgets. Conflicts to be identified are: (1) Ph.D. thesis advisor or advisee; (2) postdoctoral adviser or advisee for the previous 48 months; (3) collaborators or co-authors for the past 48 months; and (4) any other individual or institution with which the investigator has financial ties (please specify). Organize the information as shown in the sample table below: list full names in each column in alphabetical order.

Last Name	First Name	Institution	Conflict Type
Apple	Alison A.	Reed College	Ph.D. advisor for (Name)
Barley	Barry B.	Brown Institute	Collaborator for (Name)
Raspberry	Rudy R.	White University	Financial ties with co-PI (Name)

Proposers are reminded to identify the program announcement/solicitation number (06-500) in the program announcement/solicitation block on the proposal Cover Sheet. Compliance with this requirement is critical to determining the relevant proposal processing guidelines. Failure to submit this information may delay processing.

B. Budgetary Information

Cost Sharing:

Cost sharing is not required by NSF in proposals submitted under this Program Solicitation.

C. Due Dates

Proposals must be submitted by the following date(s):

Full Proposal Target Date(s):

- January 10, 2006
- January 10, 2008
- January 10, 2010

D. FastLane Requirements

Proposers are required to prepare and submit all proposals for this announcement/solicitation through the FastLane system. Detailed instructions for proposal preparation and submission via FastLane are available at: <https://www.fastlane.nsf.gov/a1/newstan.htm>. For FastLane user support, call the FastLane Help Desk at 1-800-673-6188 or e-mail fastlane@nsf.gov. The FastLane Help Desk answers general technical questions related to the use of the FastLane system. Specific questions related to this program announcement/solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this announcement/solicitation.

Submission of Electronically Signed Cover Sheets. The Authorized Organizational Representative (AOR) must electronically sign the proposal Cover Sheet to submit the required proposal certifications (see Chapter II, Section C of the [Grant Proposal Guide](#) for a listing of the certifications). The AOR must provide the required electronic certifications within five working days following the electronic submission of the proposal. Proposers are no longer required to provide a paper copy of the signed Proposal Cover Sheet to NSF. Further instructions regarding this process are available on the FastLane Website at: <http://www.fastlane.nsf.gov>

VI. PROPOSAL REVIEW INFORMATION

A. NSF Proposal Review Process

Reviews of proposals submitted to NSF are solicited from peers with expertise in the substantive area of the proposed research or education project. These reviewers are selected by Program Officers charged with the oversight of the review process. NSF invites the proposer to suggest, at the time of submission, the names of appropriate or inappropriate reviewers. Care is taken to ensure that reviewers have no conflicts with the proposer. Special efforts are made to recruit reviewers from non-academic institutions, minority-serving institutions, or adjacent disciplines to that principally addressed in the proposal.

The National Science Board approved revised criteria for evaluating proposals at its meeting on March 28, 1997 ([NSB 97-72](#)). All NSF proposals are evaluated through use of the two merit review criteria. In some instances, however, NSF will employ additional criteria as required to highlight the specific objectives of certain programs and activities.

On July 8, 2002, the NSF Director issued [Important Notice 127](#), Implementation of new Grant Proposal Guide Requirements Related to the Broader Impacts Criterion. This Important Notice reinforces the importance of addressing both criteria in the preparation and review of all proposals submitted to NSF. NSF continues to strengthen its internal processes to ensure that both of the merit review criteria are addressed when making funding decisions.

In an effort to increase compliance with these requirements, the January 2002 issuance of the GPG incorporated revised proposal preparation guidelines relating to the development of the Project Summary and Project Description. Chapter II of the GPG specifies that Principal Investigators (PIs) must address both merit review criteria in separate statements within the one-page Project Summary. This chapter also reiterates that broader impacts resulting from the proposed project must be addressed in the Project Description and described as an integral part of the narrative.

Effective October 1, 2002, NSF will return without review proposals that do not separately address both merit review criteria within the Project Summary. It is believed that these changes to NSF proposal preparation and processing guidelines will more clearly articulate the importance of broader impacts to NSF-funded projects.

The two National Science Board approved merit review criteria are listed below (see the [Grant Proposal Guide](#) Chapter III.A for further information). The criteria include considerations that help define them. These considerations are suggestions and not all will apply to any given proposal. While proposers must address both merit review criteria, reviewers will be asked to address only those considerations that are relevant to the proposal being considered and for which he/she is qualified to make judgments.

What is the intellectual merit of the proposed activity?

How important is the proposed activity to advancing knowledge and understanding within its own field or across different fields? How well qualified is the proposer (individual or team) to conduct the project? (If appropriate, the reviewer will comment on the quality of the prior work.) To what extent does the proposed activity suggest and explore creative and original concepts? How well conceived and organized is the proposed activity? Is there sufficient access to resources?

What are the broader impacts of the proposed activity?

How well does the activity advance discovery and understanding while promoting teaching, training, and learning? How well does the proposed activity broaden the participation of underrepresented groups (e.g., gender, ethnicity, disability, geographic, etc.)? To what extent will it enhance the infrastructure for research and education, such as facilities, instrumentation, networks, and partnerships? Will the results be disseminated broadly to enhance scientific and technological understanding? What may be the benefits of the proposed activity to society?

NSF staff will give careful consideration to the following in making funding decisions:

Integration of Research and Education

One of the principal strategies in support of NSF's goals is to foster integration of research and education through the programs, projects, and activities it supports at academic and research institutions. These institutions provide abundant opportunities where individuals may concurrently assume responsibilities as researchers, educators, and students and where all can engage in joint efforts that infuse education with the excitement of discovery and enrich research through the diversity of learning perspectives.

Integrating Diversity into NSF Programs, Projects, and Activities

Broadening opportunities and enabling the participation of all citizens -- women and men, underrepresented minorities, and persons with disabilities -- is essential to the health and vitality of science and engineering. NSF is

committed to this principle of diversity and deems it central to the programs, projects, and activities it considers and supports.

Additional Review Criteria:

Reviewers of PBI proposals will specifically consider the five bulleted issues described in Section II. Program Description and the Management Plan in their evaluation. In addition, reviewers will be asked to comment on the quality of the prior work described in the "Results from Prior NSF Support" section of the proposal. Moreover, preference will be given to projects with clear, convincing plans for Internet-accessible dissemination (for example, through GBIF) in interoperable formats of the results of PBI supported activity.

B. Review Protocol and Associated Customer Service Standard

All proposals are carefully reviewed by at least three other persons outside NSF who are experts in the particular field represented by the proposal. Proposals submitted in response to this announcement/solicitation will be reviewed by Ad Hoc Review followed by Panel Review.

Reviewers will be asked to formulate a recommendation to either support or decline each proposal. The Program Officer assigned to manage the proposal's review will consider the advice of reviewers and will formulate a recommendation.

A summary rating and accompanying narrative will be completed and submitted by each reviewer. In all cases, reviews are treated as confidential documents. Verbatim copies of reviews, excluding the names of the reviewers, are sent to the Principal Investigator/Project Director by the Program Director. In addition, the proposer will receive an explanation of the decision to award or decline funding.

NSF is striving to be able to tell proposers whether their proposals have been declined or recommended for funding within six months. The time interval begins on the closing date of an announcement/solicitation, or the date of proposal receipt, whichever is later. The interval ends when the Division Director accepts the Program Officer's recommendation.

In all cases, after programmatic approval has been obtained, the proposals recommended for funding will be forwarded to the Division of Grants and Agreements for review of business, financial, and policy implications and the processing and issuance of a grant or other agreement. Proposers are cautioned that only a Grants and Agreements Officer may make commitments, obligations or awards on behalf of NSF or authorize the expenditure of funds. No commitment on the part of NSF should be inferred from technical or budgetary discussions with a NSF Program Officer. A Principal Investigator or organization that makes financial or personnel commitments in the absence of a grant or cooperative agreement signed by the NSF Grants and Agreements Officer does so at their own risk.

VII. AWARD ADMINISTRATION INFORMATION

A. Notification of the Award

Notification of the award is made to *the submitting organization* by a Grants Officer in the Division of Grants and Agreements. Organizations whose proposals are declined will be advised as promptly as possible by the cognizant NSF Program Division administering the program. Verbatim copies of reviews, not including the identity of the reviewer, will be provided automatically to the Principal Investigator. (See section VI.A. for additional information on the review process.)

B. Award Conditions

An NSF award consists of: (1) the award letter, which includes any special provisions applicable to the award and any numbered amendments thereto; (2) the budget, which indicates the amounts, by categories of expense, on which NSF has based its support (or otherwise communicates any specific approvals or disapprovals of proposed expenditures); (3) the proposal referenced in the award letter; (4) the applicable award conditions, such as Grant General Conditions (NSF-GC-1); * or Federal Demonstration Partnership (FDP) Terms and Conditions * and (5) any announcement or other NSF issuance that may be incorporated by reference in the award letter. Cooperative agreement awards are administered in accordance with NSF Cooperative Agreement Financial and Administrative Terms and Conditions (CA-FATC). Electronic mail notification is the preferred way to transmit NSF awards to organizations that have electronic mail capabilities and have requested such notification from the Division of Grants and Agreements.

*These documents may be accessed electronically on NSF's Website at <http://www.nsf.gov/awards/managing/>. Paper copies of these documents may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from pubs@nsf.gov.

More comprehensive information on NSF Award Conditions is contained in the NSF *Grant Policy Manual* (GPM) Chapter II, available electronically on the NSF Website at http://www.nsf.gov/publications/pub_summ.jsp?ods_key=gpm. The GPM is also for sale through the Superintendent of Documents, Government Printing Office (GPO), Washington, DC 20402. The telephone number at GPO for subscription information is (202) 512-1800. The GPM may be ordered through the GPO Website at <http://www.gpo.gov>.

Special Award Conditions:

Special specimen collection conditions apply. The awardee shall ensure that award activities conducted inside and outside the US and its territories and possessions are coordinated, as necessary, with appropriate Government authorities, and that appropriate licenses, permits or approvals are obtained prior to undertaking proposed activities. NSF does not assume responsibility for awardee compliance with the laws and regulations of the country in which the work is to be conducted.

C. Reporting Requirements

For all multi-year grants (including both standard and continuing grants), the PI must submit an annual project report to the cognizant Program Officer at least 90 days before the end of the current budget period.

Special Reporting Requirements:

The Principal Investigator shall provide a summary, in the "Special Requirements" section of each annual and final project report, of all permits, licenses or other necessary approvals associated with specimen collection. The information should include the names of all permits/licenses/necessary approvals, the granting authority, date acquired, duration, and the purpose of the permit/license/approval.

Within 90 days after the expiration of an award, the PI also is required to submit a final project report. Failure to provide final technical reports delays NSF review and processing of pending proposals for the PI and all Co-PIs. PIs should examine the formats of the required reports in advance to assure availability of required data.

PIs are required to use NSF's electronic project reporting system, available through FastLane, for preparation and submission of annual and final project reports. This system permits electronic submission and updating of project reports, including information on project participants (individual and organizational), activities and findings, publications, and other specific products and contributions. PIs will not be required to re-enter information previously provided, either with a proposal or in earlier updates using the electronic system.

VIII. CONTACTS FOR ADDITIONAL INFORMATION

General inquiries regarding this program should be made to:

- Charles Lydeard, Program Director, Directorate for Biological Sciences, Division of Environmental Biology, 635 N, telephone: (703) 292-7142, fax: (703) 292-9064, email: clydeard@nsf.gov
- Juan Carlos Morales, Program Director, Directorate for Biological Sciences, Division of Environmental Biology, 635 N, telephone: (703) 292-8481, fax: (703) 292-9064, email: jmorales@nsf.gov
- James E. Rodman, Program Director, Directorate for Biological Sciences, Division of Environmental Biology, 635 N, telephone: (703) 292-8481, fax: (703) 292-9064, email: jrodman@nsf.gov
- Judith E. Skog, Program Director, Directorate for Biological Sciences, Division of Environmental Biology, 635 N, telephone: (703) 292-7203, email: jskog@nsf.gov

Program Officers, Systematic Biology and Biodiversity Inventories Cluster, Directorate for Biological Sciences, Division of Environmental Biology, Room 635, telephone 703-292-8481.

For questions related to the use of FastLane, contact:

- LaQuanda Terrell, Program Technology Analyst, Directorate for Biological Sciences, Division of Environmental Biology, 635 N, telephone: 703-292-8481, fax: 703-292-9064, email: biofl@nsf.gov

IX. OTHER PROGRAMS OF INTEREST

The NSF *Guide to Programs* is a compilation of funding for research and education in science, mathematics, and engineering. The NSF *Guide to Programs* is available electronically at <http://www.nsf.gov/cgi-bin/getpub?gp>. General descriptions of NSF programs, research areas, and eligibility information for proposal submission are provided in each chapter.

Many NSF programs offer announcements or solicitations concerning specific proposal requirements. To obtain additional information about these requirements, contact the appropriate NSF program offices. Any changes in NSF's fiscal year programs occurring after press time for the *Guide to Programs* will be announced in the NSF *E-Bulletin*, which is updated daily on the NSF Website at <http://www.nsf.gov/home/ebulletin>, and in individual program announcements/solicitations. Subscribers can also sign up for NSF's *MyNSF News Service* (<http://www.nsf.gov/mynsf/>) to be notified of new funding opportunities that become available.

Biodiversity Surveys and Inventories (BSI). This program is part of the Systematic Biology and Biodiversity Inventories Cluster in the Division of Environmental Biology. It reviews proposals to discover and document the species-level diversity of all forms of life on Earth. Supported surveys may be (1) primarily area-based (focusing on species inventory and new species discovery, plus in some cases ecological, biogeographic, and/or evolutionary hypothesis testing), (2) primarily clade-based (regional to continental-scale species inventory and discovery within a particular taxonomic group), or (3) primarily guild-based (surveys that couple species inventory and discovery with macroecological, historical biogeographic, and/or macroevolutionary hypothesis testing). Thus, projects may balance (and trade-off) relative amounts of effort devoted to species inventory and discovery, and to ecological/biogeographic/evolutionary hypothesis testing. Elements likely to be common to BS&I projects, depending on their focus, include the following: (1) Collections -- natural history specimens, cultures, stocks or other physical samples are the material objects of discovery, study, and inventory. Methods of collection and curatorial arrangements for the care and vouchering of samples must be described. Proposals to collect and study organisms that have a minimal museum (or collection) tradition should indicate this fact, discuss the form that useful collections or cultures would take as well as their impact on future taxonomic practice in the group, and present plans for implementation and curation of such collections, stocks, or cultures. (2) Species inventories -- documentation of the number, taxonomic placement, and, where appropriate, relative abundance of (and/or interactions among) species encountered; integration with prior knowledge of species occurrences in the region under study; and urgency for this particular area or group to be studied, are required. Such documentation may take several forms, depending on the current state of knowledge for the targeted taxonomic groups, but all projects should develop and begin implementation of plans for Internet-accessible products in interoperable formats, such as species checklists or catalogs, quadrat-based inventories, interactive keys or other expert identification systems, and taxon authority files. (3) Specimen databases -- the collections newly made during the course of the project, along with specimens, samples, or cultures already in repositories, should be identified in web-accessible databases, for further use by scientists and others. (4) Locality databases, with sites fully geo-referenced (via Global Positioning System, GPS, technology for all newly sampled sites) to facilitate mapping and GIS applications. (5) Education and Outreach -- field work to collect and identify organisms provides attractive training opportunities for students at all levels, and when conducted abroad, also presents opportunities for international collaboration with host country scientists and students. These students and colleagues should be partners in the research, conceptually and logistically, to the fullest extent possible.

Biological Research Collections (BRC). The Biological Research Collections Program in the Division of Biological Infrastructure (DBI) provides support for biological collection improvements, collection-related databasing, and research to develop better techniques for curation and collection management. Collections may include vouchered natural history specimens or direct artifacts of organisms such as recorded sounds or photographic images.

International Polar Year (IPY). The international community of polar researchers and funding agents has begun planning for an International Polar Year (IPY) to take place March 2007-March 2009 (see <http://dels.nas.edu/us-ipy> and <http://www.ipy.org>). Where appropriate, proposals are encouraged to identify their relevance to IPY activities.

ABOUT THE NATIONAL SCIENCE FOUNDATION

The National Science Foundation (NSF) funds research and education in most fields of science and engineering. Awardees are wholly responsible for conducting their project activities and preparing the results for publication. Thus, the Foundation

does not assume responsibility for such findings or their interpretation.

NSF welcomes proposals from all qualified scientists, engineers and educators. The Foundation strongly encourages women, minorities and persons with disabilities to compete fully in its programs. In accordance with Federal statutes, regulations and NSF policies, no person on grounds of race, color, age, sex, national origin or disability shall be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving financial assistance from NSF, although some programs may have special requirements that limit eligibility.

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